
Longitudinal Pathways between Maternal Mental Health in Infancy and Offspring Romantic Relationships in Adulthood: A 30-year Prospective Study

Lisa Slominski, Arnold Sameroff and Katherine Rosenblum,
University of Michigan and Tim Kasser, *Knox College*

Abstract

Longitudinal pathways between maternal mental health in infancy and offspring romantic relationship outcomes in adulthood were examined using a 30-year prospective longitudinal study of 196 mothers and their children. Structural equation modeling revealed that maternal mental health at 30 months was related to offspring relationship status and relationship attachment insecurity at 30 years. The adolescent variables of offspring mental health and parental relationship status mediated the link between maternal mental health and offspring relationship status. In addition, adolescent mental health and family conflict mediated the pathway between maternal mental health and offspring attachment insecurity. These results highlight the importance of individual and parental mental health to romantic relationship outcomes, and emphasize the value of taking a developmental approach to the study of romantic relationships.

Keywords: longitudinal; maternal; psychopathology; relationships

Introduction

The successful formation of romantic relationships is generally considered to be one of the central tasks of adulthood. In fact, for many individuals, maintaining a satisfying intimate relationship is a primary source of happiness and well-being (Russell & Wells, 1994). Conversely, being in a distressed relationship constitutes a major risk factor for mental health problems, particularly depression (Burman & Margolin, 1992). Moreover, conflictual parental relationships have been linked to children's maladjustment (Davies & Cummings, 1994). From both a clinical and public policy perspective, it is thus important to examine earlier predictors of later romantic relationship outcomes in order to understand the processes through which individuals come to think about and behave within their romantic relationships.

Correspondence should be addressed to Lisa Slominski, Department of Psychology, Emory University, 36 Eagle Row, Atlanta, GA 30322, USA. Email: lslomin@emory.edu

This research was supported in part by grants from the National Institute of Mental Health awarded to Arnold Sameroff.

Correlates of Romantic Relationship Outcomes

Three important aspects of romantic relationships are relationship status, relationship satisfaction, and relationship representations. Relationship status refers to the type of relationship a person is involved in (e.g., casually dating, in a committed dating relationship, married). Relationship satisfaction refers to a person's subjective perceptions of the quality of his or her relationship, and the level of contentment a person feels within that relationship. Relationship representations include the cognitive schemas that an individual has formed about interpersonal relationships in general, and can be measured by levels of attachment security (Bowlby, 1980; Fraley, 2002). In the adult attachment literature, security has been conceptualized along two independent underlying behavioral/affective dimensions: anxious attachment and avoidant attachment (Bartholomew & Horowitz, 1991). People with high levels of anxious attachment are preoccupied with intimacy needs, worry about being unloved or abandoned, and constantly seek reassurance from their romantic partners. Those with high levels of avoidant attachment tend to avoid intimacy, profess little need for close relationships, and detach themselves from experiencing strong affect within relationships (Crittenden & Ainsworth, 1989). Individuals with high levels of either anxious or avoidant attachment, or with high levels of both, are said to be insecure in their romantic relationship attachment.

Research on romantic relationships has identified several factors related to relationship status, satisfaction, and representations. Much of this research has focused on earlier experiences within the family. For example, closeness to mothers and fathers during childhood has been associated with relationship satisfaction as adults (Belt & Abidin, 1996), and positive interactions with the father at five years has been associated with long-term marriages in adulthood (Franz, McClelland, & Weinberger, 1991). Similarly, positive relationships with parents in adolescence have been related to marital adjustment in adulthood, and parental care in adolescence has been associated with adult children's attitudes about relationships in general, as well as their level of satisfaction within their current relationship (Flouri & Buchanan, 2002).

Although these previous studies draw from a range of theoretical perspectives, including social-cognitive, attachment, and family systems, they have in common the idea that earlier negative experiences within the family put individuals at risk for later impairments in their romantic relationships (Overbeek, Stattin, Vermulst, Ha, & Engels, 2007). The argument for taking a birth to maturity perspective in examining romantic relationships is based on the theory that early experiences in the parent-child dyad lead children to develop cognitive-affective representations of the level of closeness and affective quality that characterize intimate bonds, and these representations then carry over from the parent-child relationship to intimate relationships in adulthood (Bretherton & Mulholland, 1999).

Maternal Mental Health and Offspring Romantic Relationships

One potentially important characteristic of the family environment that previous studies have not addressed is parental mental health. Over the past several decades, a number of researchers have found that parental mental health problems place children at a significantly greater risk for lower psychological, social, and physical health compared with children in families not affected by parental mental illness (for reviews, see Beardslee, Versage, & Gladstone, 1998; Goodman & Gotlib, 2002; Weissman,

Wickramaratnew, Nomura, Warner, Pilowsky, & Verdelli, 1997). Yet to our knowledge, there are no prospective longitudinal studies that have examined long-term associations between parental mental illness experienced during infancy and offspring's romantic relationship outcomes in adulthood.

Parental mental health may influence offspring romantic relationships by affecting the ways in which offspring understand social relationships. Attachment theory emphasizes the importance of the mother–infant relationship in providing an enduring model for the child of how relationships function. Bowlby (1980) suggested that developing attachments can be disrupted by conditions that limit, impair, or distort the infant's behavior, as well as conditions that interfere with adult responsiveness, such as maternal mental health problems. Research has consistently shown that maternal mental illness during infancy is related to negative and punitive parenting practices, and that these practices in turn contribute to insecure mother–infant attachments during this developmental period (Murray, Fiori-Cowley, Hooper, & Cooper, 1996; Oyserman, Mowbray, Meares, & Firminger, 2000). It is therefore possible that if maternal behavior is adversely affected by mental illness, there may be implications for both current and later adjustment in the child. Because infancy and early childhood is when mother–child attachments are initially formed, maternal mental illness during this period may exert particularly powerful effects on children's later adjustment in the area of relationships. This study will test this hypothesis by examining long-term pathways between maternal mental health during infancy and offspring relationship status, satisfaction, and representations in adulthood.

Potential Mediators

Offspring Mental Health. When examining long-term pathways between experiences in early childhood and adult outcomes, it is important to also examine potential mediators, or variables that explain these pathways. One likely pathway through which parental mental health is associated with offspring romantic relationships is through its association with offspring mental health. A large body of research has confirmed that children of parents with mental illness are at greater risk for psychiatric disorders compared with children from homes with non-ill parents. It has been reported that between 25 and 50 percent of these children will experience some level of psychiatric disorder in their lifetimes, compared with 10–20 percent of children whose parents are not affected by mental illness (Beardslee et al., 1998).

Research has also supported links between individual mental health and relationship stability and satisfaction. Marital status is among the best-established correlates of psychiatric morbidity in adult life, with marriage and higher levels of relationship satisfaction associated with more positive psychological well-being, and divorce and relationship dissatisfaction associated with psychological distress (Aseltine & Kessler, 1993). Both social causation and social selection models have been advanced to account for these relations (Maughan & Taylor, 2001). From a social causation perspective, variations in relationship status and satisfaction lead to variations in mental health. For example, divorce has been linked to an increased symptomatology of substance abuse and dependence (Barrett, 1999), depression (Aseltine & Kessler, 1993), and psychological distress (Hope, Rodgers, & Power, 1999). From a social selection perspective, the prior mental health of an individual is assumed to influence later relationship status and satisfaction. Maughan and Taylor (2001) found evidence that emotional and behavioral problems in adolescence were linked to relationship

status and risk for divorce in adulthood, and research has shown that diagnoses of depression, conduct disorder, and schizophrenia all decrease the likelihood of marriage for both men and women (Agerbo, Byrne, Eaton, & Mortensen, 2004; Forthofer, Kessler, Story, & Gotlib, 1996; Rushing, 1979).

This study will include offspring mental health in adolescence as a potential mediator of the proposed link between maternal mental health in infancy and offspring romantic relationship status, satisfaction, and representations in adulthood. Adolescence is a time when mental health problems, such as depression, increase in the population, and it is also the time in which most individuals in this culture have their first experiences with romantic relationships (Carver, Joyner, & Udry, 2003). It is possible that mental health problems during adolescence not only influence individuals' relationships at the time, but may also affect the ways in which these adolescents think about romantic relationships in general. By including earlier mental health as a predictor of later romantic relationship outcomes, we will be able to not only examine the role of offspring mental health as a potential mediator, but also test for possible selection effects in this sample.

Parental Relationship Status. Another potential mediator of the link between early parental mental health and offspring adult romantic relationship outcomes is parental relationship status. Research has shown that children in families with parental mental illness are more likely to experience parental divorce compared with children in families without parental mental illness (Downey & Coyne, 1990). Adult offspring of divorced parents, compared with adult offspring of non-divorced parents, are at greater risk for divorce themselves or for having non-marital ties that are unstable or distressed (Sanders, Halford, & Behrens, 1999). Moreover, the combination of parental affective illness and divorce is associated with poor mental health in the offspring of affectively ill adults (Beardslee et al., 1998), which may then negatively affect their romantic relationships.

One explanation for this link between parental relationship status and offspring relationship outcomes may be a process of social or observational learning. In other words, offspring may emulate the relationship behaviors and patterns observed in their parents. Westervelt and Vandenberg (1997) found that conflictual parental relationships predicted difficulties with intimacy in adult children of divorce. These researchers asserted that children learn inappropriate behavior, poor conflict management skills, and dysfunctional patterns from observing their parents' relationship, and that they then create similar environments and practice similar behaviors in their own adult relationships.

It is also likely that parental divorce affects offspring's attitudes about divorce in general. Children of divorce may hold the belief that marriage does not last a lifetime, and that divorce is always an option. Arising from this belief is a decrease in stigma surrounding divorce, which then increases the likelihood of divorce in this group (Glenn & Kramer, 1987). In support of this idea, Greenberg and Nay (1982) found no differences in the quantity or quality of dating behavior, attitudes toward marriage, or conflict resolution skills between respondents from intact and divorced homes. The only difference found was that children whose parents had divorced expressed a more favorable attitude toward divorce in general.

As noted earlier, mental health is related to both the stability and quality of romantic relationships. Early maternal mental health may thus be related to maternal relationship status by affecting whether or not the mother maintains a stable intimate

relationship with her child's father. In accordance, this study will examine whether one pathway to adult relationship status is from early maternal mental health to later parental relationship status, and from parental relationship status to offspring relationship status in adulthood.

Family Relationships. A final variable that may mediate the link between parental mental illness and offspring romantic relationships is quality of family relationships. Research shows that poor parenting and family difficulties are risk factors associated with parental mental illness (Rutter, 1990; Weissman et al., 1997). At the family level, lower family cohesion, a chaotic home environment, poorer communication, and increased parent-child discord are more prevalent among families with a parent with a mental health problem (Warner, Mufson, & Weissman, 1995). In one study comparing different levels of family relationships, researchers found that family-level interactions were more influenced by the presence of parental mental illness than by individual parent-child or spousal relationships (Dickstein et al., 1998). In addition, parents with mental health problems have been shown to display increased verbal and physical aggression toward their children (Cummings, Keller, & Davies, 2005), increased hostility, impatient use of directives when guiding child behavior, and increased negative affect (Lovejoy, Graczyk, O'Hare, & Neuman, 2000).

Aspects of the family environment, including quality of relationships within the family, have also been linked with aspects of adult romantic relationships. According to attachment theory, early experiences in parent-child relationships form the basis of cognitive-affective schemas that govern people's understanding of intimate relationships throughout life (Baldwin, 1992). In addition, individuals learn specific skills in intimate communication (e.g., affect regulation, conflict management, problem solving) from their experiences in their family of origin, particularly with their parents (Hammen, Brennan, & Shih, 2004). For example, research has shown that family conflict, including parental and parent-child conflictual relationships, is consistently related to offspring conflictual relationships and resolution styles (Dadds, Atkinson, Turner, Blums, & Lendich, 1999). Self-reports of family interactional processes during adolescence have also been found to predict adult reports of happiness or problems in romantic relationships (Feldman, Gowen, & Fisher, 1998). This study will extend upon previous studies by examining quality of family relationships as perceived by both mothers and children during early and late adolescence as a possible mediator of the predicted long-term association between maternal mental health in early childhood and offspring romantic relationship outcomes in adulthood.

Summary and Research Questions

The primary goal of this study is to examine the development of romantic relationship outcomes from infancy to adulthood using a 30-year prospective longitudinal study of mothers and children. Although research has consistently linked aspects of the earlier family environment to offspring relationship characteristics in adulthood, this study will fill a gap in the current research literature by examining associations between maternal mental health at 30 months, and offspring romantic relationship status, satisfaction, and representations at 30 years. In addition, this study will attempt to explain these long-term developmental pathways by testing adolescent mental health, parental relationship status, and family conflict as mediators. The following hypotheses are tested:

- (1) Maternal mental health at 30 months will be related to offspring relationship status, relationship satisfaction, and attachment insecurity at 30 years.
- (2) These direct associations will be mediated by the adolescent variables of offspring mental health, family conflict, and parental relationship status.

Method

Participants

Our data come from a 30-year, three-generation longitudinal study of mental health. This study was initiated in 1970, and included families with an over-representation of maternal psychopathology. Thus, this sample is particularly well suited to explore the effects of maternal and child mental health. Because the intent of this study was to recruit a community sample of pregnant women with mental health problems, obstetric patients were checked against a county-wide psychiatric register that provided information about psychiatric contacts and diagnoses of mental illness. This register had been in existence since 1959, and included approximately 95 percent of all individuals receiving mental health services in a metropolitan area with a population of about 850 000. A sample of women without mental health problems was obtained by matching these women to other pregnant women scheduled to deliver at the same hospital on the demographic variables of socioeconomic status (SES), race, age, marital status, and number of children. SES was computed using mother's education, father's education, and head of household's occupation. Race was self-identified as European American (63 percent), African-American (34 percent), or Puerto Rican (3 percent). The final sample had approximately half of the mothers displaying no mental health problems, and approximately half of the mothers having a psychiatric diagnosis before participant children were three years old.

This study followed offspring from the time mothers were pregnant until offspring were 30 years old. The current analyses utilize data collected from mothers when children were 30 months old, as well as data collected from mothers and children at 13, 18, and 30 years (Gutman, Sameroff, & Cole, 2003; Sameroff, Seifer, & Zax, 1982). At 30 months, 196 families were assessed. Data were collected from 156 participants at ages 13 and 18 (55 percent female, 68 percent European American, 32 percent African-American), and 139 participants at age 30 (51 percent female, 71 percent European American, 29 percent African-American).

As is usual in longitudinal studies, families who dropped out between 30 months and age 18 ($N = 40$), and between 18 and 30 ($N = 17$), scored lower on the measures of family SES, parent and child mental health, and parental relationship status compared with families who remained in the study. However, a high degree of variability remained in our sample after attrition, as described below in the measures section.

Procedure

When children were 30 months old, mothers came to the laboratory and were assessed for mental health using a structured psychiatric interview. At 13 and 18 years, families were brought into the laboratory and administered a number of questionnaires and interviews assessing parent and child mental health, demographic variables, and aspects of the family environment. Because of the geographic distribution of the

participants, at age 30, all data were collected through several phone interviews, and a survey packet mailed to participants.

Although a variety of measures were collected on families at each data wave, the current report will focus primarily on maternal mental health at 30 months as a predictor of offspring relationship status, satisfaction, and attachment insecurity at 30 years. In addition, this study will examine the adolescent variables of offspring mental health, parental relationship status, and family conflict as mediators of these predicted associations.

Measures

Maternal Mental Health—Infancy. When children were 30 months old, mothers came to the laboratory and were assessed for mental health using a DSM-based psychiatric interview based on the current and past psychopathology scales (CAPPS; Spitzer & Endicott, 1972). CAPPS is a structured clinical interview that evaluates both current psychiatric functioning and past history. In addition to diagnoses, a score for overall severity of illness based on number of diagnoses both concurrently and since the child's birth was obtained from CAPPS. This score was rated by clinicians on a 5-point scale, with higher numbers corresponding to the clinician's perceptions of more severe mental health problems. Inter-rater reliability for this measure exceeded .80. For the purposes of this study, scores were reversed so that higher numbers correspond to better mental health. In this sample, 50.3 percent of mothers had good or superior mental health, 15.6 percent displayed some impairment, and 34.2 percent had moderate to severe mental health problems during their offspring's first two and a half years of life.

Mental Health—Adolescence. Offspring mental health was measured at 13 and 18 years. At 13 years, adolescents were interviewed using the community mental health interview (CMHI; Ikle, Lipp, Butters, & Ciarlo, 1983). The CMHI is composed of 88 behaviorally oriented multiple-choice items relevant to the functioning of children during early to late adolescence, and the items focus on the adolescent's functioning during the past 30 days. The interview is administered verbally, and generates scales reflecting both adaptive and maladaptive behavior, with higher scores reflecting better mental health. For the purposes of the present study, item-level factor analysis of the CMHI at 13 years was used to derive internalizing (20 items; $\alpha = .79$) and externalizing (18 items, $\alpha = .81$) scales. Scales were reverse coded so that higher scores would reflect greater internalizing or externalizing problem behaviors, and internalizing and externalizing scales were standardized and combined to create an overall measure of adolescent mental health at 13 years. Participants in this study had mean 13-year mental health scores of 3.27 ($SD = .32$).

Mental health of offspring at age 18 was measured by both observer rating and diagnostic interview. The children's global assessment scale (C-GAS; Shaffer et al., 1983) is a rating scale for individuals 18 years of age and younger based on the global assessment of functioning (GAF) scale from the Diagnostic Statistical Manual (DSM-IVR). The C-GAS is routinely used as part of DSM assessments for overall ratings of mental health, and the psychometric soundness of the C-GAS has been supported in a number of studies (Bird, Canino, Rubio-Stipec, & Ribera, 1987). This score ranges on a scale from 0 to 100, and assesses participants' general psychological functioning in several areas of life (e.g., home, school, and work). Scores of below 70 generally

indicate poor psychological functioning. In studies that have used the C-GAS, standard deviations range from 7 to 16, and tend to be higher in clinical samples (Asarnow, Jaycox, & Tompson, 2001; Bird et al., 1987). C-GAS ratings were obtained independently by the two clinicians present during the interviews, and these ratings were then averaged. Ratings by these two interviewers were highly correlated ($r = .79, p < .001$). In this sample, 36.6 percent of participants displayed good or superior mental health, 42 percent displayed some impairment, and 21.4 percent displayed moderate to severe mental health problems at age 18. Mean C-GAS score was 73.17 ($SD = 15.35$).

Mental health of offspring at age 18 was also measured with the diagnostic interview for children and adolescents (DICA; Herjanic & Reich, 1982). DICA is a standardized clinical interview designed to provide diagnoses and number of symptoms for individuals 18 years of age and younger on 25 disorders. These disorders include internalizing problems (e.g., depression, anxiety, posttraumatic stress disorder, eating disorders), as well as externalizing problems (e.g., conduct disorder, oppositional disorder). Disorders also include behaviors such as alcohol abuse, marijuana abuse, and cigarette use. Agreement between child psychiatrists and lay interviewers on child symptoms and diagnoses has been found to be adequate, with estimates of sensitivity at 65 percent, estimates of specificity at 70 percent, and agreement (kappa) at .55. Test–retest reliability over two- to three-month intervals is also strong, with estimates ranging from 80 to 90 percent (Boyle, Offord, Racine, & Sanford, 1993). A DICA total problems score was computed for each participant by adding together the number of problems participants endorsed during the entire interview. Mean DICA scores were 34.01 ($SD = 23.26$).

These three indicators were highly correlated ($p < .001$), and were standardized and summed to create one measure of mental health in adolescence. The CMHI and DICA scores were first reversed so that in the measure, higher scores would indicate better mental health for offspring.

Family Conflict—Adolescence. At ages 13 and 18, participants and mothers were interviewed with the community mental health interview (CMHI; Ikle et al., 1983). Six items on 4-point scales addressed issues of family relationships, particularly the level of conflict between parents and children. On this scale, higher scores indicate more family conflict, and lower scores indicate better perceptions of family relationships by the adolescent. Examples of questions for adolescents are ‘In the last month, how often did your parents hit or slap you?’ and ‘How often did you feel that your parents were dissatisfied or unhappy with the things you did?’. Examples of questions for mothers were ‘How often does your child have verbal arguments with you?’ and ‘How often have you hit or slapped your child in the last month?’. At age 13, scores for adolescents ranged from 6 to 21, and the mean score was 17.00 ($SD = 2.68$). Scores for mothers ranged from 8 to 21, and the mean score was 16.39 ($SD = 2.86$). At age 18, scores for adolescents ranged from 12 to 24, and the mean score was 20.52 ($SD = 2.63$). Scores for mothers ranged from 7 to 24, and the mean score was 19.69 ($SD = 2.88$). The four family conflict scores for adolescents and mothers at 13 and 18 were added together to create one adolescent family conflict variable. The alpha for these four variables was .62.

Parental Relationship Status—Childhood and Adolescence. At children’s birth, 4, 13, and 18 years, mothers were asked to indicate whether they were currently married or romantically involved with their child’s father. At each point, a score of 1 indicated that

mothers and fathers were romantically involved whereas a score of 0 indicated that mothers and fathers were not together. These scores were then summed for the purposes of this study so that a score of 0 indicated that parents were not together at any point during offspring's childhood or adolescence, and a score of 4 indicated that parents were married or romantically involved with each other at all points from offspring's birth through age 18. In this sample, 36 percent of parents were together from the time children were born through age 18, 53 percent broke up or divorced at some point during offspring's childhood or adolescence, and 11 percent had not been together since children's birth.

Relationship Attachment Insecurity—Adulthood. Relationship attachment insecurity was assessed with the experiences in close relationships—revised questionnaire (ECR-R; Fraley, Waller, & Brennan, 2000), which was mailed to participants at age 30. The ECR-R measures the extent to which people experience attachment-related anxiety and attachment-related avoidance. The *attachment anxiety* scale is comprised of 18 items, and includes items such as 'I'm afraid that I will lose my partner's love', 'I often worry that my partner doesn't really love me', and 'I often wish that my partner's feelings for me were as strong as my feelings for him or her'. The *attachment avoidance* scale is also comprised of 18 items, and includes items such as 'I prefer not to be too close to romantic partners', 'I find it difficult to allow myself to depend on romantic partners', and 'I am nervous when partners get too close to me'. Participants rated each item on a 7-point scale, and items for each scale were summed to create measures of attachment-related anxiety and attachment-related avoidance. These scales were significantly correlated ($r = .67, p < .001$). To create an overall measure of attachment insecurity, these two measures were then added together. The mean attachment insecurity in this sample was 44.85 ($SD = 20.18$), and scores ranged from 18 to 96.

Romantic Relationship Status—Adulthood. Romantic relationship status was obtained through a phone interview when participants were age 30. Relationship status was rated on a 4-point scale, with a score of 1 corresponding to 'not in a romantic relationship', a score of 2 corresponding to 'casually dating', a score of 3 corresponding to 'in a committed relationship', and a score of 4 corresponding to 'married'. In this sample, 11 percent of 30-year-old participants were not in relationships, 10 percent were casually dating, 33 percent were in committed dating relationships, and 46 percent were married.

Relationship Satisfaction—Adulthood. Relationship satisfaction was a measure of how participants were experiencing their current most stable romantic relationship on a dimension from satisfying and supportive to unsatisfying and conflict ridden. The measure of relationship satisfaction was a composite score based on 13 questions presented to participants through a phone interview when participants were age 30. Examples of questions include 'My partner lets me know he/she cares about me' and 'My partner ignores me'. Participants were asked to rate each item on a 5-point scale ranging from 'never happens' to 'almost always happens', and these items were then averaged to create a total measure of relationship satisfaction. If participants were not in a romantic relationship ($N = 29$), they did not fill out this measure. Mean ratings of relationship satisfaction were 4.2 ($SD = .55$), which indicates that individuals who were in romantic relationships were generally satisfied with the quality of these relationships.

Results

Preliminary Analyses

Preliminary correlations indicate strong associations between the study variables (see Table 1). As expected, early maternal mental health was significantly correlated with all three adolescent variables, as better maternal mental health at 30 months was related to better offspring mental health at 13 and 18 years ($r = .24, p < .01$), as well as with lower levels of conflict in the family ($r = -.22, p < .01$), as reported by mothers and children in adolescence. In addition, mothers with better mental health early on were more likely to remain romantically involved with their children's father over time ($r = .32, p < .001$). Maternal mental health at 30 months was also correlated with the 30-year offspring outcomes of relationship status and attachment insecurity, as offspring of mothers with better mental health reported more stable romantic relationships ($r = .30, p < .001$) and lower levels of attachment-related anxiety and avoidance ($r = -.27, p < .01$) in adulthood. Maternal mental health at 30 months was not directly related to offspring relationship satisfaction at 30 years ($r = .10, p = .31$).

In addition, the adolescent variables of offspring mental health, family conflict, and parental relationship status were significantly correlated with each other, with more stable parental relationships associated with lower levels of conflict in the family ($r = -.21, p < .05$) and better mental health for adolescents ($r = .22, p < .05$). Better offspring mental health was associated with more stable romantic relationships ($r = .28, p < .01$), and lower levels of attachment insecurity ($r = -.42, p < .01$) for offspring in adulthood, as was lower levels of family conflict ($r = -.28, p < .01$ for relationship status; $r = .46, p < .001$ for attachment insecurity). Finally, adolescents whose parents stayed together throughout their childhood and adolescence were more likely to be married or in stable dating relationships in adulthood ($r = .29, p < .01$).

Primary Analyses

Structural equation modeling (SEM) was used for our primary analyses in this study. Statisticians generally recommend that for use in SEM sample sizes exceed 100 cases (Hoyle, 1995). Some rules of thumb in the literature are that there should be at least 10 to 20 times as many cases as variables in the model (Mitchell, 1993), and there should be at least 15 cases per measured variable or indicator (Stevens, 1996). Although our sample size for this study was relatively small, it meets these three recommendations, and was sufficient for estimating the relatively simple models that we tested.

Missing data were handled using full information maximum likelihood (FIML) methods. These procedures have been found to yield the least biased estimates when all available data are used for longitudinal analyses (vs. listwise deletion of missing data) (Enders & Bandalos, 2001; Raykov, 2005). Thus, the full sample of participants whose mothers provided mental health data at 30 months were utilized for these analyses. This full sample provides the best possible variance/covariance estimates, and was least likely to be biased by missing data. Alternative longitudinal analyses using just those participants without missing data (i.e., listwise deletion) yielded results that were substantially identical to those reported below.

The gap between the observed and the estimated covariance matrix, produced according to the specified models, was used by the program to compute goodness-of-fit indices that help determine the extent to which the conceptual model provides an

Table 1. Correlations between the Study Variables

	2	3	4	5	6	7
1. Maternal mental health (30 months)	.320***	.243**	-.223**	.304***	-.266**	.103
2. Parental relationship status (birth-18)		.216*	-.212*	.287**	-.187	.099
3. Adolescent mental health (13 and 18)			-.541***	.278**	-.416***	.073
4. Family conflict (13 and 18)				-.276**	.458***	.266*
5. Romantic relationship status (30)					-.451***	.117
6. Attachment insecurity (30)						-.536***
7. Relationship satisfaction (30)						

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$.

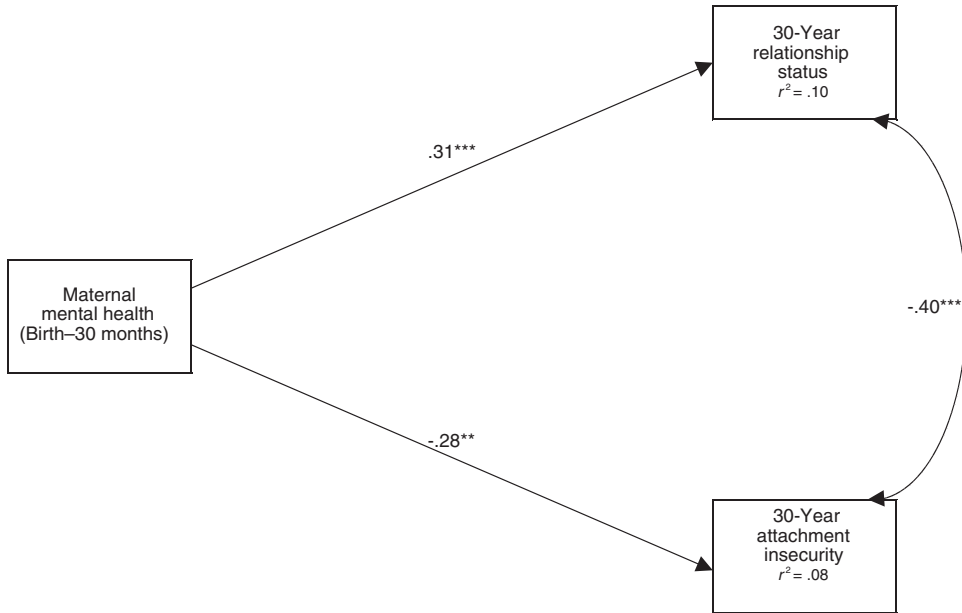


Figure 1. Structural Equation Model Depicting Direct Associations between Maternal Mental Health in Early Childhood and Offspring Relationship Status and Attachment Insecurity in Adulthood.

Notes: ** $p < .01$, *** $p < .001$.

acceptable representation of the data. We relied on the widely used goodness-of-fit indices known as the normed fit index (NFI), the Tucker–Lewis index (TLI), and the comparative fit index (CFI) to indicate the extent of fit. A value of .90 and higher was regarded as indication of a good fit of the model. In addition, we used the root mean square error of approximation (RMSEA) misfit index and its recommended value of .06 or lower (Hu & Bentler, 1999) to indicate acceptable fit.

Direct Associations between Maternal Mental Health and Offspring Relationships

The goal of this study was to examine associations between maternal mental health in early childhood and offspring romantic relationship outcomes in adulthood. Based off of the significant correlations described earlier, a model was first calculated that tested direct associations between maternal mental health in early childhood and offspring relationship status and relationship attachment insecurity at age 30 (Figure 1). As can be seen from this model, maternal mental health was significantly associated with offspring adult relationship status ($\beta = .31, p < .001$) and adult relationship attachment insecurity ($\beta = -.28, p < .01$). Offspring of mothers with mental health problems in their early childhoods were less likely to be married or in committed romantic relationships in adulthood, and were more likely to show higher levels of attachment-related anxiety and avoidance in regards to their romantic relationships. Maternal mental health explained 10 percent of the variance in offspring adult relationship status and 8 percent of the variance in offspring attachment insecurity. Because this model was fully saturated, the overall fit is not relevant.

Mediated Pathways from Maternal Mental Health to Offspring Relationship Outcomes

The second aim of this study was to explore mediators of the associations found between maternal mental health and offspring relationship outcomes. A structural equation model was developed that tested all potential mediating pathways between maternal mental health and offspring relationship status and relationship attachment insecurity. The mediators tested were the adolescent variables of offspring mental health, family conflict, and parental relationship status. A structural model was tested, with all possible pathways drawn from maternal mental health to each of the mediators and from each of the mediators to both offspring relationship outcomes. In addition, direct pathways from maternal mental health to offspring relationship status and attachment insecurity continued to be tested, and covariances between the mediators and between the outcomes were also tested.

Because this model was fully saturated, the overall fit is not relevant. In order to develop a parsimonious mediation model, all non-significant pathways were next removed. These pathways included those from parental relationship status to offspring attachment insecurity, and from adolescent family conflict to offspring relationship status. In addition, because the direct pathways between maternal mental health and offspring attachment insecurity and relationship status were no longer significant when the mediators were included in the model, these pathways were also removed.

The final model is shown in Figure 2. As can be seen from this model, parental relationship status during childhood and adolescence mediated the association between maternal mental health and offspring adult relationship status. Maternal mental health was significantly associated with parental relationship status ($\beta = .33, p < .001$), as mothers with better mental health were more likely to be romantically involved with children's fathers. Parental relationship status from birth through age 18 then predicted offspring relationship status at age 30 ($\beta = .25, p < .01$), as offspring whose parents were together while they were growing up were more likely to be married or in stable dating relationships as adults.

Adolescent family conflict mediated the association between maternal mental health and offspring adult attachment insecurity. Maternal mental health was significantly associated with adolescent family conflict ($\beta = -.22, p < .01$), with more severe mental health problems in the mother during offspring's infancy predicting higher levels of conflict in the family during offspring's adolescence. Adolescent family conflict then significantly predicted adult attachment insecurity ($\beta = .29, p < .01$), with more family conflict in adolescence associated with more attachment-related anxiety and avoidance in adulthood.

Adolescent mental health was a significant mediator for both pathways between early maternal mental health and offspring relationship status and attachment insecurity. Maternal mental health at 30 months predicted offspring mental health at 13 and 18 years ($\beta = .25, p < .01$), and adolescent mental health then predicted adult relationship status ($\beta = .22, p < .05$) and adult attachment insecurity ($\beta = -.21, p < .05$). Participants with better mental health in adolescence were more likely to be married or in stable dating relationships in adulthood, and had lower levels of attachment insecurity at age 30.

The fact that the significant direct pathways found in Figure 1 between maternal mental health and offspring relationship status and attachment insecurity dropped to nonsignificant when the adolescent variables were included in the model indicated

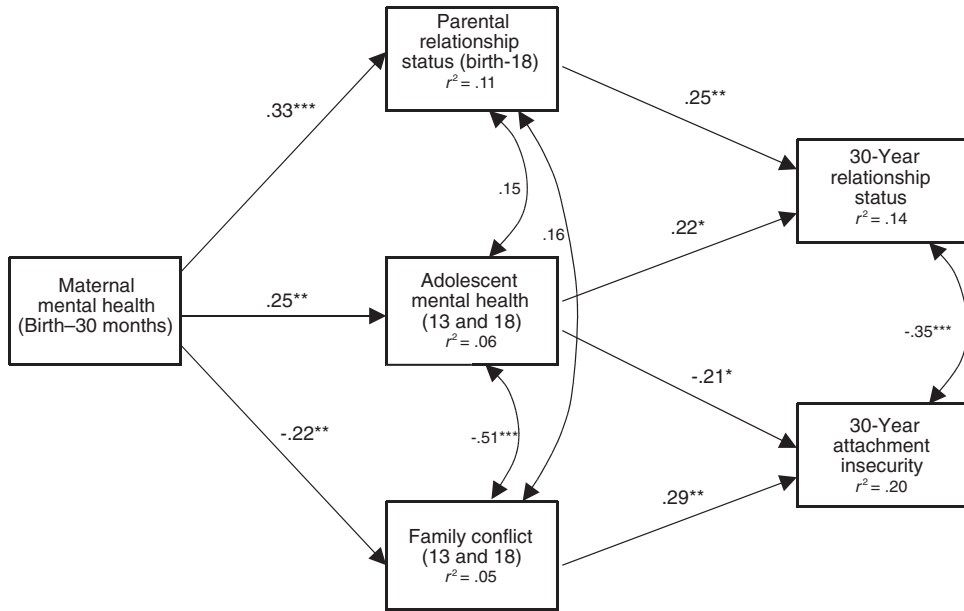


Figure 2. Structural Equation Model Depicting Mediating Pathways between Maternal Mental Health in Early Childhood and Romantic Relationship Outcomes at Age 30. Notes: The values along the paths are standardized regression coefficients (betas), and the values along the curved lines are correlations. This model fits the data well, $\chi^2(4, N = 139) = 4.691, p = .321$; with normed fit index = .965, Tucker–Lewis index = .968, comparative fit index = .994, and root mean square error of approximation = .023. * $p < .05$, ** $p < .01$, *** $p < .001$.

significant mediation. In addition, a formal test of mediation was conducted using MacKinnon's (MacKinnon, Lockwood, Brown, Wang, & Hoffman, 2002) method for SEM. This test involved calculating one complete model in which the direct pathways from maternal mental health to offspring relationship outcomes were freely estimated, and one model in which the pathways were constrained to zero. Results of a model comparison suggested that the fit of these two models did not differ significantly from each other ($\chi^2 = 3.809, df = 2, p = .149$), which indicates significant mediation.

Finally, the covariances between adolescent family conflict and adolescent mental health ($r = -.51, p < .001$) and between adult relationship status and adult attachment insecurity ($r = -.35, p < .001$) were significant. Together, parental relationship status and adolescent mental health explained 14 percent of the variance in adult relationship status, and adolescent mental health and family conflict explained 20 percent of the variance in attachment insecurity, which was an increase in explained variance over the direct model tested in Figure 1.

Gender Comparison Model

Post hoc analyses examined possible gender differences in the associations found within our model. An omnibus test of mean gender differences was conducted using a

multivariate ANOVA. Results of this MANOVA were that there were no gender differences in our study variables [Hotelling's trace = .162, $F(7,64) = 1.48$, $p = .190$]. Multiple group analyses were then conducted in SEM to determine whether our model in Figure 2 fit equally well for males and females in our sample. In these analyses, one model was run in which all parameters were constrained to be equal for males and females, and a second model was run in which these parameters were allowed to be freely estimated (Vandenberg, 2002). Results from the model comparison ($\chi^2 = 1.165$, $df = 7$, $p = .992$) suggest that imposing the additional restrictions of equal factor loadings across the two sexes of participants did not result in a statistically significant worsening of overall model fit. Thus, we can conclude that our original model tested in Figure 2 fit equally well for males and females in our sample.

Discussion

The primary goal of this study was to investigate the developmental origins of adult romantic relationships. Using a longitudinal sample of mothers and children followed over the course of 30 years, pathways between maternal mental health at 30 months and offspring relationship status, satisfaction, and representations at 30 years were examined. In addition, offspring mental health, parental relationship status, and family conflict as measured throughout adolescence were tested as potential mediators of these pathways.

Preliminary analyses tested direct associations between early maternal mental health and offspring adult romantic relationships. These analyses revealed that individuals whose mothers had mental health problems when they were young were more likely to be in less secure romantic relationships as adults, and were more likely to be anxious and avoidant in their intimate relationships. Somewhat surprisingly, early maternal mental illness was not found to be associated with levels of satisfaction within current romantic relationships. One possible reason for this first finding is that only participants who were currently in romantic relationships answered questions about their satisfaction with that relationship. Because analyses just described suggest that individuals with a history of maternal mental illness were less likely overall to be in romantic relationships, this would have excluded a substantial number of participants from this group.

Overall, these results linking early maternal mental health to later aspects of offspring romantic relationships are notable for a number of reasons. Although the literature shows that parental mental health impacts children in a number of ways, the question of whether early parental mental health has direct or indirect influences on offspring's adult romantic relationships had not been addressed prior to this study. These results highlight the importance of maternal mental health during the time in which mother-child bonds begin to form, and suggest that maternal mental health during this time period contributes to individuals' internal working models of romantic relationships. When mothers have mental health problems during their children's infancy, these children are more likely to grow up and display either anxious or avoidant behaviors with their romantic partners, and are also less likely to be married or in committed dating relationships.

The next set of analyses examined mediators of these direct pathways. The first significant finding was that offspring mental health measured in early and late adolescence was found to mediate the pathways between early maternal mental health and offspring relationship status and attachment insecurity at 30 years. As expected,

maternal mental health problems in infancy predicted offspring mental health problems in adolescence. This is in keeping with two decades of research that indicates that children who have a parent with a mental illness are at significantly greater risk for multiple psychosocial problems themselves (Beardslee et al., 1998). Offspring mental health in adolescence then predicted their relationship status in adulthood, as participants with more mental health problems at 13 and 18 years were less likely to be married or in committed dating relationships at 30 years. In addition, offspring mental health in adolescence predicted their levels of attachment insecurity in adulthood, as participants with more mental health problems at 13 and 18 years displayed more anxious and avoidant representations of romantic relationships at 30 years. Together, these results lend support to the social selection hypothesis (Maughan & Taylor, 2001), suggesting that adolescent mental health problems are risk factors for adult relationship outcomes.

Broadly, these results highlight the importance of mental health to the development of romantic relationships. Mental health is a variable that has received relatively little attention in the romantic relationship literature to date. Although we have known that mental health problems exert negative effects on an individual's cognitions, motivations, and behaviors across time, to our knowledge, few studies prior to this one have investigated whether earlier and concurrent mental health problems directly or indirectly predict later romantic relationship outcomes. Results of this study suggest that mental health problems beginning in adolescence can have long-term effects on how individuals think about the role of the self and others in romantic relationships, as well as predict characteristics of the romantic relationships that these individuals will engage in during adulthood.

In addition to adolescent mental health, another pathway from maternal mental health in early childhood to offspring romantic relationship status in adulthood was through parental relationship status. Mothers with better mental health early on were more likely to be involved with offspring's fathers over the following 18 years. Offspring whose parents were married or romantically involved with each other while they were growing up were then more likely to be married or in serious dating relationships as adults. This is consistent with research that has found that children of divorced parents are more likely to experience divorce themselves (Amato, 1996).

It should be noted, however, that the length of parental relationship is not necessarily a measure of quality of relationship. For example, a long-lasting warm and loving relationship between parents will likely have a different impact on offspring adult relationship status than will a long-lasting abusive or cold parental relationship. Because data on parental relationship quality was not gathered in the current study, this issue could not be addressed here. In addition, no information was gathered about additional parental relationships, such as those between parents and step-parents. Regardless, these analyses suggest that parents who stay married while their children were growing up were more likely to have children who were married in adulthood.

The final result of this study was that family conflict was an additional mediator of the pathway between early maternal mental health and offspring adult attachment insecurity. Families in which mothers had mental health problems early on had higher levels of conflict as reported by both offspring and mothers in adolescence. This is in keeping with a body of research that has shown that family and marital discord are common risk factors associated with parental mental illness (Rutter, 1990; Weissman et al., 1997). In addition, offspring from families with higher levels of conflict grew up to endorse more anxious and avoidant representations of romantic relationships at age

30. These findings are in keeping with adult attachment theory, which suggests that individuals construct internal working models of close relationships based on their past experiences within their families of origin (Bowlby, 1980; Fraley, 2002). Participants from families with high levels of conflict while growing up appeared to develop more negative beliefs about interpersonal relationships, and these beliefs were evident in their representations of romantic relationships in adulthood.

Limitations

There are several limitations to this study that must be acknowledged when interpreting these results. Firstly, as discussed earlier, although the sample size in this study was sufficient for running our structural models, the overall sample size was not large. Participants were part of a longitudinal study that they had entered into at birth, and although analyses indicated that a great deal of variability was present in all key variables at each time point in this study, attrition was an issue of concern.

Secondly, in this study, we only had information about whether the mother was romantically involved with the child's father over time, and did not have information about the quality of the parental relationship or information about other relationships parents might be involved in (such as relationships with step-parents). These variables are without a doubt important to predicting offspring romantic relationship outcomes, and should be included in future research.

Thirdly, the sample used in this study was recruited with an overrepresentation of maternal psychopathology. This was done because mental health has been a key variable of interest throughout this longitudinal study, and an overrepresentation of mental health problems makes this sample particularly sensitive to the effects of mental health. Yet although the vast majority of children in this study scored in the average range on our mental health measures in adolescence and adulthood, it should be noted that these findings may not be generalizable to all populations. Instead, we view this study as a first step in a line of research that suggests the importance of including both individual and parental mental health when examining predictors of adult romantic relationships.

Finally, with these analyses, we do not intend to draw causal conclusions about how earlier experiences are related to later romantic relationships. These longitudinal results do not suggest that an individual's past unalterably determines the future course of her or his romantic relationships. We know that many individuals who had been raised by mothers with mental health problems or who had experienced mental health problems themselves develop healthy, stable romantic relationships in adulthood. Instead, the current findings are consistent with theory and recent research that indicate that current functioning in romantic relationships reflects, at least in part, the history of attachment-relevant experiences of the individual, as well as his or her earlier mental health.

Implications and Conclusions

Several implications can be drawn from this study. Firstly, these results highlight the importance of maternal mental health to child functioning, and suggest that maternal mental health measured even at the earliest point in a child's life may have consequences for children's romantic relationship outcomes decades later. Interventions focused on alleviating these early maternal mental health problems are thus crucial, and may help to impede negative trajectories of functioning that can extend into

adolescence and adulthood. Early childhood may be a developmental period in which children are particularly vulnerable to parental mental illness, perhaps because of their total dependence upon caregivers during this period.

Secondly, findings from this study suggest that the mental health of an individual in adolescence has implications for his or her romantic relationships up to several decades later. Adolescent mental health emerged as a significant mediator of the pathways between early maternal mental health and offspring romantic relationship outcomes. Therefore, improving the mental health of adolescents exposed to maternal mental illness could also help these individuals develop more positive representations of interpersonal relationships, as well as increase their likelihood of maintaining committed romantic relationships in adulthood. Future research should examine more closely which specific aspects of mental health problems or specific disorders are linked with attachment insecurity and relationship status. Intervention designs could also test the effects of treatment of mental health problems on romantic relationship outcomes.

Thirdly, because the associations between maternal mental health and offspring relationship status and attachment insecurity were mediated by family conflict and parental relationship status, these results imply that improving the home environment in families with a history of maternal mental illness could have lasting effects on offspring romantic relationships. One possible intervention point may therefore be aimed at strengthening relationships within the family, and teaching both parents and children constructive ways of dealing with conflict.

Finally, these results emphasize how taking a developmental approach to the study of romantic relationships can add to this growing field of research. Based on these findings, we can conclude that the ways in which individuals think about and behave within their romantic relationships is shaped not only by current characteristics of individuals and their contexts, but also by the nature and course of their developmental histories. By understanding these developmental pathways, particularly regarding mental health issues in the individual and in the mother, we may better understand the processes through which individuals come to think about and behave within their romantic relationships.

References

- Agerbo, E., Byrne, M., Eaton, W. W., & Mortensen, P. B. (2004). Marital and labor market status in the long run in schizophrenia. *Archives of General Psychiatry*, *61*, 28–33.
- Amato, P. R. (1996). Explaining the intergenerational transmission of divorce. *Journal of Marriage and Family*, *58*, 628.
- Asarnow, J. R., Jaycox, L., & Tompson, M. (2001). Depression in youth: Psychosocial interventions. *Journal of Clinical Child Psychology*, *30*, 33–47.
- Aseltine, R., & Kessler, R. (1993). Marital disruption and depression in community samples. *Journal of Health and Social Behavior*, *34*, 237–251.
- Baldwin, M. (1992). Relational schemas and the processing of social information. *Psychological Bulletin*, *112*, 461–484.
- Barrett, A. (1999). Marital trajectories and mental health: A typological approach to the social causation hypothesis. *Dissertation Abstracts International*, *60*, 1781.
- Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology*, *61*, 226–244.
- Beardslee, W. R., Versage, E. M., & Gladstone, T. R. G. (1998). Children of affectively ill parents: A review of the past 10 years. *Journal of the American Academy of Child and Adolescent Psychiatry*, *37*, 1134–1141.

- Belt, W., & Abidin, R. (1996). The relation of childhood abuse and early parenting experiences to current marital quality in a nonclinical sample. *Child Abuse and Neglect*, 20, 1019–1030.
- Bird, H., Canino, G., Rubio-Stipec, M., & Ribera, J. (1987). Further measures of the psychometric properties of the children's global assessment scale. *Archives of General Psychiatry*, 44, 821–824.
- Bowlby, J. (1980). *Attachment and loss*. New York: Basic Books.
- Boyle, M. H., Offord, D. R., Racine, Y., & Sanford, M. (1993). Evaluation of the diagnostic interview for children and adolescents for use in general population samples. *Journal of Abnormal Child Psychology: An Official Publication of the International Society for Research in Child and Adolescent Psychopathology*, 21, 663–681.
- Bretherton, I., & Mulholland, K. (1999). Internal working models in attachment relationships: A construct revisited. In J. Cassidy, & P. Shaver (Eds.), *Handbook of attachment: Theory, research, and Clinical applications* (pp. 89–111). New York: Guilford Press.
- Burman, B., & Margolin, G. (1992). Analysis of the association between marital relationships and health problems: An interactional perspective. *Psychological Bulletin*, 112, 39–63.
- Carver, K., Joyner, K., & Udry, J. R. (2003). National estimates of adolescent romantic relationships. In P. Florsheim, & P. Florsheim (Eds.), *Adolescent romantic relations and sexual behavior: Theory, research, and practical implications* (pp. 23–56). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Crittenden, P. M., & Ainsworth, M. D. S. (1989). Child maltreatment and attachment theory. In D. Cicchetti, V. Carlson, D. Cicchetti, & V. Carlson (Eds.), *Child maltreatment: Theory and research on the causes and consequences of child abuse and neglect* (pp. 432–463). New York: Cambridge University Press.
- Cummings, E. M., Keller, P. S., & Davies, P. T. (2005). Towards a family process model of maternal and paternal depressive symptoms: Exploring multiple relations with child and family functioning. *Journal of Child Psychology and Psychiatry*, 46, 479–489.
- Dadds, M., Atkinson, E., Turner, C., Blums, G., & Lendich, B. (1999). Family conflict and child adjustment: Evidence for a cognitive-contextual model of intergenerational transmission. *Journal of Family Psychology*, 13, 194–208.
- Davies, P., & Cummings, E. (1994). Marital conflict and child adjustment: An emotional security hypothesis. *Psychological Bulletin*, 116, 387–411.
- Dickstein, S., Seifer, R., Hayden, L. C., Schiller, M., Sameroff, A. J., Keitner, G., et al. (1998). Levels of family assessment: II. Impact of maternal psychopathology on family functioning. *Journal of Family Psychology*, 12, 23–40.
- Downey, G., & Coyne, J. C. (1990). Children of depressed parents: An integrative review. *Psychological Bulletin*, 108, 50–76.
- Enders, C., & Bandalos, D. (2001). The relative performance of full information maximum likelihood estimation for missing data in structural equation models. *Structural Equation Modeling*, 8, 430–457.
- Feldman, S. S., Gowen, L. K., & Fisher, L. (1998). Family relationships and gender as predictors of romantic intimacy in young adults: A longitudinal study. *Journal of Research on Adolescence*, 8, 263–286.
- Flouri, E., & Buchanan, A. (2002). What predicts good relationships with parents in adolescence and partners in adult life: Findings from the 1958 British birth cohort. *Journal of Family Psychology*, 16, 186–198.
- Forthofer, M. S., Kessler, R. C., Story, A. L., & Gotlib, I. H. (1996). The effects of psychiatric disorders on the probability and timing of first marriage. *Journal of Health and Social Behavior*, 37, 121–132.
- Fraley, R. C. (2002). Attachment stability from infancy to adulthood: Meta-analysis and dynamic modeling of developmental mechanisms. *Personality and Social Psychology Review*, 6, 123–151.
- Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology*, 78, 350–365.
- Franz, C., McClelland, D., & Weinberger, J. (1991). Childhood antecedents of conventional social accomplishments in mid-life adults: A 35-year prospective study. *Journal of Personality and Social Psychology*, 60, 586–595.

- Glenn, N. D., & Kramer, K. B. (1987). The marriages and divorces of the children of divorce. *Journal of Marriage and the Family*, *49*, 811–825.
- Goodman, S., & Gotlib, I. (2002). *Children of depressed parents: Alternative pathways to risk for psychopathology*. Washington, DC: American Psychological Press.
- Greenberg, E. F., & Nay, W. R. (1982). The intergenerational transmission of marital instability reconsidered. *Journal of Marriage and the Family*, *44*, 335–347.
- Gutman, L. M., Sameroff, A. J., & Cole, R. (2003). Academic growth curve trajectories from 1st grade to 12th grade: Effects of multiple social risk factors and preschool child factors. *Developmental Psychology*, *39*, 777–790.
- Hammen, C., Brennan, P. A., & Shih, J. H. (2004). Family discord and stress predictors of depression and other disorders in adolescent children of depressed and nondepressed women. *Journal of the American Academy of Child Adolescent Psychiatry*, *43*, 994–1002.
- Herjanic, B., & Reich, W. (1982). Development of a structured psychiatric interview for children: Agreement between child and parent on individual symptoms. *Journal of Abnormal Child Psychology*, *10*, 307–324.
- Hope, S., Rodgers, B., & Power, C. (1999). Marital status transitions and psychological distress: Longitudinal evidence from a national population sample. *Psychological Medicine*, *29*, 381–389.
- Hoyle, R. (1995). *Structural equation modeling: Concepts, issues, and applications*. Thousand Oaks, CA: Sage Publications.
- Hu, L., & Bentler, P. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1–55.
- Ikle, D., Lipp, E., Butters, J., & Ciarlo, J. (1983). *Development and validation of the adolescent community mental health interview*. Denver, CO: Mental Systems Evaluation.
- Lovejoy, M. C., Graczyk, P. A., O'Hare, E., & Neuman, G. (2000). Maternal depression and parenting behavior: A meta-analytic review. *Clinical Psychology Review*, *20*, 561–592.
- MacKinnon, D., Lockwood, C., Brown, C., Wang, W., & Hoffman, J. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, *7*, 83–104.
- Maughan, B., & Taylor, A. (2001). Adolescent psychological problems, partnership transitions, and adult mental health: An investigation of selection effects. *Psychological Medicine*, *31*, 291–305.
- Mitchell, R. (1993). Path analysis: Pollination. In S. Schneider, & J. Gurevitch (Eds.), *Design and analysis of ecological experiments* (pp. 211–232). New York: Chapman and Hall.
- Murray, L., Fiori-Cowley, A., Hooper, R., & Cooper, P. (1996). The impact of postnatal depression and associated adversity on early mother–infant interactions and later infant outcomes. *Child Development*, *67*, 2512–2526.
- Overbeek, G., Stattin, H., Vermulst, A., Ha, T., & Engels, R. (2007). Parent-child relationships, partner relationships, and emotional adjustment: A birth-to-maturity prospective study. *Developmental Psychology*, *43*, 429–437.
- Oyserman, D., Mowbray, C. T., Meares, P. A., & Firminger, K. B. (2000). Parenting among mothers with a serious mental illness. *American Journal of Orthopsychiatry*, *70*, 296–315.
- Raykov, T. (2005). Analysis of longitudinal studies with missing data using covariance structure modeling with full-information maximum likelihood. *Structural Equation Modeling*, *12*, 493–505.
- Rushing, W. (1979). Marital status and mental disorder: Evidence in favor of a behavioral model. *Social Forces*, *58*, 540–556.
- Russell, R. J. H., & Wells, P. A. (1994). Predictors of happiness in married couples. *Personality and Individual Differences*, *17*, 313–321.
- Rutter, M. (1990). Psychosocial resilience and protective mechanisms. In J. Rolf, A. Masten, D. Cicchetti, K. Nuechterlein, & S. Weintraub (Eds.), *Risk and protective factors in the development of psychopathology* (pp. 181–214). New York: Cambridge University Press.
- Sameroff, A. J., Seifer, R., & Zax, M. (1982). Early development of children at risk for emotional disorder. *Monographs of the Society for Research in Child Development*, *47*, 1–82.
- Sanders, M. R., Halford, W. K., & Behrens, B. C. (1999). Parental divorce and premarital couple communication. *Journal of Family Psychology*, *13*, 60–74.
- Shaffer, D., Gould, M., Brasic, J., Ambrosini, P., Fisher, P., Bird, H., et al. (1983). A children's global assessment scale (CGAS). *Archives of General Psychiatry*, *40*, 1228–1231.

- Spitzer, R., & Endicott, J. (1972). Current and past psychopathology scales (CAPPS). *Archives of General Psychiatry*, 27, 678–680.
- Stevens, J. (1996). Applied multivariate statistics for the social sciences. In L. Grimm, & P. Yarnell (Eds.), *Reading and understanding more multivariate statistics* (pp. 261–284). Washington, DC: American Psychological Association.
- Vandenberg, R. J. (2002). Toward a further understanding of an improvement in measurement invariance methods and procedures. *Organizational Research Methods*, 5, 139–158.
- Warner, V., Mufson, L., & Weissman, M. (1995). Offspring at high and low risk for depression and anxiety: Mechanisms of psychiatric disorder. *Journal of the American Academy of Child Adolescent Psychiatry*, 34, 786–797.
- Weissman, M., Wickramaratnew, P., Nomura, Y., Warner, V., Pilowsky, D., & Verdelli, H. (1997). Offspring of depressed parents: 10 years later. *Archives of General Psychiatry*, 54, 932–940.
- Westervelt, K., & Vandenberg, B. (1997). Parental divorce and intimate relationships of young adults. *Psychological Reports*, 80, 923–926.